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AF/PAW

Dkt. 71228/JPW/PT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Toshihiko ISHIGAMI et al.
Serial No.: 10/680,896 Examiner: Natali K. Walford
Filing Date: October 8, 2003 Group Art Unit: 2879
For: METAL VAPOR DISCHARGE LAMP, FLOODLIGHT PROJECTOR AND METAL
VAPOR DISCHARGE LAMP LIGHTING DEVICE

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Abel Griffith

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Respectfully submitted,

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Dkt. 71228/JPW/PT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: Toshihiko Ishigami et al.

Serial No.: 10/680,896

Examiner: Natalie K. Walford

Filed: October 8, 2003

Group Art Unit: 2879

For: METAL VAPOR DISCHARGE LAMP, FLOODLIGHT PROJECTOR AND METAL
VAPOR DISCHARGE LAMP LIGHTING DEVICE

1185 Avenue of the Americas
New York, New York 10036
December 3, 2007

Mail Stop Appeal Brief--Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

BRIEF ON APPEAL FOR APPLICANT

This appeal is taken from the final rejection of claims 1, 3-8 and 10-19 in the Office Action dated July 2, 2007 which was mailed by the Patent and Trademark Office (PTO) in connection with the above-identified subject application.

I. REAL PARTY IN INTEREST

The real parties in interest are co-assignees Harison Toshiba Lighting Corp. and Toshiba Lighting & Technology Corporation (hereinafter, collectively, "Assignees") by virtue of an Assignment executed by Toshihiko Ishigami, Kozo Uemura, Mikio Matsuda, Toshio Hiruta, Hiroyoshi Takanishi and Hideo Inoue and recorded with the United States Patent and Trademark Office on October 8, 2003 at Reel 014605, Frame 0190.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to appellant, appellant's legal representative, or Assignees which will

directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF THE CLAIMS

Claims 1, 3-8 and 10-19 are currently pending. The subject application was filed with claims 1-19 with the U.S. Patent and Trademark Office on October 8, 2003. In a September 19, 2005 Office Action, original claims 1-19 were rejected under 35 U.S.C. §102(b). By a December 13, 2005 amendment, applicant amended claim 6 and canceled claim 9. In a February 6, 2006 Office Action, claims 1-4, 13 and 16 were rejected under 35 U.S.C. §102(b) and claims 5-8, 10-12, 14, 15 and 17-19 were rejected under 35 U.S.C. §103(a). By a May 4, 2006 amendment, applicant amended claims 6 and 7. In a December 15, 2006 Office Action, claims 1-3 and 5 under 35 U.S.C. §102(b), and claims 4, 6-8 and 10-19 under 35 U.S.C. §103(a). By a March 15, 2007 amendment, applicant canceled claim 2 and amended claim 1. In a July 2, 2007 final Office Action, claim 1 was rejected under 35 U.S.C. §102(b), and claims 3-8 and 10-19 were rejected under 35 U.S.C. §103(a). This appeal was filed on October 2, 2007.

A listing of claims 1, 3-8 and 10-19 which were rejected in the July 2, 2007 final Office Action and define the subject matter of this appeal is attached hereto as **Exhibit A**. A copy of the July 2, 2007 Office Action is attached hereto as **Exhibit B**.

IV. STATUS OF AMENDMENTS

No amendments have been filed since the July 2, 2007 final Office Action was mailed by the Patent Office.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claims 1 and 6 of the present application are in independent

form.

Each of independent claims 1 and 6 is directed to a metal vapor discharge lamp configured to emit a large amount of near-infrared radiation, and comprising a refractory and light-transmitting hermetic vessel (1 in Fig. 1), a pair of electrodes (22,3 in Fig. 1) fixed to said hermetic vessel, and a discharge medium sealed in the hermetic vessel, wherein the discharge medium contains a halide and a rare gas (specification at page 25, lines 14-16), with substantially no mercury.

In the metal vapor discharge lamp of independent claim 1, the discharge medium contains a halide of cesium (Cs) which radiates light of near-infrared wavelengths (750-1100 nm), and most of the light irradiated from the metal vapor discharge lamp has near-infrared wavelengths (750-1100 nm) (Fig. 2; specification at page 30, lines 1-8). Such a metal vapor discharge lamp is mainly for emitting near-infrared radiation.

In the metal vapor discharge lamp of independent claim 6, the discharge medium contains a halide of at least one of sodium (Na), scandium (Sc) and a rare earth metal which radiate visible light (380-780 nm), a ratio of visible-radiation power (380-780 nm) to near-infrared radiation power (750-1100nm), when the metal vapor discharge lamp is in an ON state, falls within a range of 0.5:1 to 4.0:1, and the metal vapor discharge lamp further comprises a visible-light blocking filter (8F in Figs. 6 and 7; specification at page 39, lines 8-12; page 42, line 4 through page 43, line 2; page 16, line 18 through page 17, line 9).

VI. GROUNDS OF REJECTION TO BE REVIEWED

Claim 1 of the present application was finally rejected under 35 U.S.C. §102(b) as purportedly anticipated by U.S. Patent No.

4,870,316 to Otani (copy attached as **Exhibit C** hereto).

Claims 3 and 5 were finally rejected under 35 U.S.C. §103(a) as purportedly unpatentable over U.S. Patent No. 4,870,316 to Otani in view of Hiramoto et al. (US 2001/0056294 A1). A copy of Hiramoto is attached as **Exhibit D** hereto.

Claim 4 was finally rejected under 35 U.S.C. §103(a) as purportedly unpatentable over U.S. Patent No. 4,870,316 to Otani in view of U.S. Patent No. 6,353,289 to Ishigami et al. (hereinafter "Ishigami '289") A copy of Ishigami '289 is attached as **Exhibit E** hereto.

Claims 6-8 and 10-19 were finally rejected under 35 U.S.C. §103(a) as purportedly unpatentable over Hiramoto et al. (US 2001/0056294 A1) in view of U.S. Patent No. 6,353,289 to Ishigami et al.

In addition, in the July 2, 2007 final Office Action, claims 14-18 were objected to under 37 C.F.R. §1.75(c) as purportedly in improper form.

VIII. ARGUMENT

1. Rejection of claim 1 under 35 U.S.C. §102(b)

It is well-established that anticipation under 35 U.S.C. §102 requires that a single reference must teach each and every aspect of the claimed invention either explicitly or inherently (see, for example, L&W Inc. v. Shertech Inc., 81 U.S.P.Q.2d 1198 (Fed.Cir. 2006); see also MPEP 706.02).

Applicant maintains that Otani (U.S. Patent No. 4,870,316 to

Otani) does not disclose each and every aspect of the subject matter of claim 1 of the present application, and therefore does not anticipate claim 1.

As pointed out above, in the metal vapor discharge lamp of claim 1, the discharge medium contains a halide and a rare gas, with substantially no mercury ("substantially disusing mercury" in claim 1 is defined in the specification at page 8, lines 10-14).

On the other hand, Otani proposes an alkali metal vapor discharge lamp including an inner envelope made of ceramics and containing cesium, **mercury** and a rare gas (see Otani, abstract).

Otani, column 5, lines 25-32 (reproduced below), which was cited in the Office Action, indicates that the inner envelope contains cesium, **mercury** and a rare gas:

"...The inner envelope 1 is filled with cesium under a vapor pressure of 400-1000 Torr, **mercury** and a rare gas, and the interior of the outer envelope 29 is maintained under a vacuum or an inert atmosphere. The vapor pressure of the contained gas in the inner envelope 1 is selected to be higher than that in the conventional lamp 100, as illustrated in FIG. 1."

Indeed, the inner envelope in each alkali metal vapor discharge lamp proposed or referenced in the Otani contains cesium, **mercury** and a rare gas.

It is submitted that there is no teaching or suggestion in Otani that the amount of mercury in the inner envelope can be an insubstantial amount, or that mercury can be omitted altogether.

Appellant submits that Otani does not disclose or suggest a metal vapor discharge lamp wherein the discharge medium contains substantially no mercury, and therefore Otani does not render the

subject matter of claim 1 of the present application unpatentable.

2. Rejections of claims 3-5 under 35 U.S.C. §103(a)

Applicant maintains that the combination of Otani (U.S. Patent No. 4,870,316) and Hiramoto (US 2001/0056294 A1) does not render claims 3 and 5 of the present application unpatentable, and that the combination of Otani and Ishigami '289 (U.S. Patent No. 6,353,289) does not render claim 4 of the present application unpatentable.

Each of claims 3-5 depend from claim 1 of the present application. As pointed out above in connection with claim 1, Otani is directed to alkali metal vapor discharge lamps each including an inner envelope containing cesium, **mercury** and a rare gas, and Otani does not disclose or suggest a metal vapor discharge lamp wherein the discharge medium contains substantially no mercury.

In the July 2, 2007 final Office Action, Hiramoto was cited as purportedly proposing a visible-light blocking filter.

However, Hiramoto does not involve a metal vapor discharge lamp wherein the discharge medium contains a halide of cesium and a rare gas, with substantially no mercury.

Therefore, even a combination of Otani and Hiramoto fails to disclose or suggest a metal vapor discharge lamp wherein the discharge medium contains a halide of cesium and a rare gas, and substantially no mercury.

Moreover, Otani, column 6, lines 34-39, teaches that mercury is needed in the alkali metal vapor discharge lamps proposed therein

to stabilize the discharging where a potential is applied across the opposite electrodes and a lamp current is reduced, and to generate a suitable temperature distribution in the radial direction.

Accordingly, one skilled in the art would not have been motivated to omit mercury from the lamp proposed by Otani.

Therefore, claim 1 would not have been obvious to one skilled in the art from the combination of Otani and Hiramoto, and would not have been obvious from the combination of Otani and Ishigami '289. Likewise, claims 3 and 5 which depend from (and therefore include all of the features of) claim 1 would not have been obvious from the combination of Otani and Hiramoto.

In the July 2, 2007 final Office Action, Ishigami '289 (column 44, lines 52-58) was cited as purportedly proposing a metal halide discharge lamp that has a rated lamp power of at most 100W.

Ishigami '289, column 44, lines 52-58, is reproduced below:

"However, mercury, which always has a high vapor pressure, is evaporated completely when sealed in a small metal halide discharge lamp having a small load, e.g., rate lamp power of at most 100 W, which is used in, for example, a headlamp for a vehicle. Therefore, the lamp voltage can be controlled by controlling the sealing amount of mercury."

Thus, Ishigami '289, column 44, lines 52-58, like Otani, involves a lamp where the discharge medium contains mercury (and such mercury must be in a substantial amount that is maintained by sealing it in the lamp).

Further, Ishigami '289 involves halide discharge lamps for

generating visible light. In contrast, Otani proposes an alkali metal vapor discharge lamp for discharging infrared radiation. Therefore, one skilled in the art would not have been motivated to modify the alkali metal vapor discharge lamp based on features of the lamps proposed by Ishigami '289 for generating visible light.

In contrast, the claimed subject matter of claim 1 of the present application is a metal vapor discharge lamp wherein most of the light irradiated from the metal vapor discharge lamp has near-infrared wavelengths (750-1100 nm).

Therefore, claim 1 would not have been obvious to one skilled in the art from the combination of Otani and Ishigami '289. Likewise, claim 4 which depends from claim 1 would not have been obvious from the combination of Otani and Ishigami '289.

3. Rejection of claims 6-8 and 10-19 under §103(a)

Applicant maintains that the combination of Hiramoto (US 2001/0056294 A1) and Ishigami '289 (U.S. Patent No. 6,353,289) does not render claims 6-8 and 10-19 of the present application unpatentable.

Independent claim 6 is directed to a metal vapor discharge lamp wherein the discharge medium discharges both near-infrared radiation and visible-radiation, and a ratio of visible-radiation power (380-780 nm) to near-infrared radiation power (750-1100nm), when the metal vapor discharge lamp is in an ON state, falls within a range of 0.5:1 to 4.0:1.

Hiramoto, as understood by applicant, proposes a discharge lamp configured to discharge visible light (with a wavelength confined to a range of 600nm to 800nm) for photodynamic therapy and

photodynamic diagnosis.

Hiramoto, [0022]-[0023], states as follows regarding the object of the lamp proposed in Hiramoto:

[0022] An object of the present invention is to provide a discharge lamp, which **mainly radiates a light suitable to a photosensitizer to be used in PDT and PDD**, and, in addition, which **does not radiate a light other than the light**.

[0023] A discharge lamp of the present invention radiates a light suitable for the wavelength range of absorption of a photosensitizer having a relatively large absorption coefficient **within the region of the wavelength range of 600 nm-800 nm**.

Hiramoto, as acknowledged in the July 2, 2007 final Office Action, does not disclose or suggest a metal vapor discharge lamp wherein the discharge medium discharges both near-infrared radiation and visible-radiation, and a ratio of visible-radiation power (380-780 nm) to near-infrared radiation power (750-1100nm), when the metal vapor discharge lamp is in an ON state, falls within a range of 0.5:1 to 4.0:1.

Ishigami '289 proposes a metal halide discharge lamp including a discharge medium, containing a plurality of halides and a rare gas, for generating visible light.

The following contentions in the July 2, 2007 final Office Action (page 5, lines 10-13) regarding Ishigami '289 are erroneous:

"... The Examiner notes that since Ishigami uses a halide and a rare earth metal that the ratio would be present. Furthermore, Ishigami discloses that the ratio of emitted visible light to all the visible light emitted for the lamp should be small (column 8, line 64 thru column 9, line 4)."

The assumption in the July 2, 2007 final Office Action that a metal halide discharge lamp wherein the discharge medium contains

a halide and a rare earth metal necessarily (or inherently) has a ratio of visible-radiation power to near-infrared radiation power within a range of 0.5:1 to 4.0:1 is plainly **incorrect**.

Table 1 of the present application (page 29) shows several of the many examples of metal halide discharge lamps (the discharge medium containing a halide and a rare earth metal) that has a ratio of visible-radiation power to near-infrared radiation power below 0.5:1. Table 3 of the present application (page 35) shows an example in which the ratio exceeds 4.0:1.

Further, Ishigami '289, column 8, line 64 thru column 9, line 4 (reproduced below) provides guidance regarding the second of a plurality of halides contained in a discharge medium of the metal halide discharge lamp proposed therein:

It should also be noted that it is not absolutely necessary for the second halide not to emit a visible light. It is acceptable for the second halide to emit a visible light, if ***the ratio of the emitted visible light to all the visible light emitted from the discharge lamp is small enough to make the effect sufficiently small***, i.e., the effect given by the visible light emitted from the second halide to all the visible light emitted from the discharge lamp.

However, Ishigami '289 (see, for example, column 7, lines 40-53) plainly proposes that while both the first halide and the second halide can emit visible light, the ratio of the visible light emitted by the second halide to the visible light emitted by the first halide should be small.

On the other hand, Ishigami '289 provides no guidance regarding a ratio of visible-radiation power to near-infrared radiation power, since Ishigami '289 is not concerned with a metal vapor discharge lamp wherein the discharge medium discharges both near-

infrared radiation and visible-radiation.

Applicant maintains that neither Hiramoto nor Ishigami '289 discloses or suggests a metal vapor discharge lamp wherein a ratio of visible-radiation power (380-780 nm) to near-infrared radiation power (750-1100nm), when the metal vapor discharge lamp is in an ON state, falls within a range of 0.5:1 to 4.0:1, as provided by the subject matter of claim 6 of the present application.

Accordingly, applicant submits that the combination Hiramoto and Ishigami '289 does not render obvious independent 6 and claims 7, 8 and 10-19 which depend from claim 6.

4. Objection to form of claims 14-18

Claims 14-18 were objected to under 37 C.F.R. §1.75(c) as purportedly in improper form. More specifically, claims 14-18 were objected to because they depend from a multiple dependent claim.

37 C.F.R. §1.75(c) prohibits a multiple dependent claim that depends from another multiple dependent claim.

However, none of the claims 14-18 of the present application are multiple dependent claims.

Accordingly, applicant submits that the objection to claims 14-18 is in error and should be withdrawn.

IX. CONCLUSION

For the foregoing reasons, applicant submits that the final rejection of claims 1, 3-8 and 10-19 of the present application is erroneous and respectfully submits that the rejection of these

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claims should be reversed.


The required fee for filing an appeal brief under 37 C.F.R. 41.20(b)(2) is FIVE HUNDRED TEN DOLLARS (\$510.00). Applicant has enclosed a check in the amount of FIVE HUNDRED TEN DOLLARS (\$510.00) to cover the fee for the filing of this brief on appeal.

If a petition for an extension of time is required to make this appeal brief timely, this paper should be considered to be such a petition.

If any additional fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,

Dated: December 3, 2007



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EXHIBIT A

to
BRIEF ON APPEAL FOR APPLICANT
(Serial No. 10/680,896)



Toshihiko ISHIGAMI et al.
Serial No.:10/680,896
Filed: October 8, 2003
Page A-1

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Listing of Claims Under Appeal

1. (previously presented) A metal vapor discharge lamp comprising:

- a refractory and light-transmitting hermetic vessel;
- a pair of electrode fixed to said hermetic vessel;

a discharge medium sealed in the hermetic vessel, the discharge medium containing a halide, a rare gas and substantially disusing mercury, the halide containing a halide of cesium (Cs) which radiates light of near-infrared wavelengths (750-1100 nm); and

most of light irradiated from the metal vapor discharge lamp having near-infrared wavelengths (750 - 1100 nm).

Claim 2 (canceled).

3. (original) The metal vapor discharge lamp according to claim 1, further comprising a visible-light blocking filter.

4. (original) The metal vapor discharge lamp according to claim 1, wherein a wattage rating of the metal vapor discharge lamp is 100 W or less.

5. (original) The metal vapor discharge lamp according to claim 1, wherein a distance between the pair of electrodes falls within a range of 1 mm to 6 mm.

6. (previously presented) A metal vapor discharge lamp comprising:

- a refractory and light-transmitting hermetic vessel;
- a pair of electrode fixed to said hermetic vessel;
- a discharge medium sealed in the hermetic vessel, the

discharge medium containing a first halide and a rare gas, the first halide containing a halide of at least one of sodium (Na), scandium (Sc) and a rare earth metal which radiate visible light (380 - 780 nm), the discharge medium substantially disusing mercury;

a ratio of visible-radiation power (380 - 780 nm) to near-infrared radiation power (750 - 1100nm) falling within a range of 0.5 : 1 to 4.0 : 1, the visible-radiation power and the near-infrared radiation power being output when the metal vapor discharge lamp is in an ON state; and

a visible-light blocking filter.

7. (previously presented) The metal vapor discharge lamp according to claim 6, wherein the discharge medium includes:

a second halide which generates a relatively high vapor pressure and being a halide of at least one metal which emits a visible light less than that emitted by the metal of the first halide; and

a third halide containing a halide of at least one metal which radiates near-infrared light.

8. (original) The metal vapor discharge lamp according to claim 6, wherein the discharge medium contains a halide of at least one of potassium (K), cesium (Cs) and rubidium (Rb) which radiate light of near-infrared wavelengths (750 -1100 nm).

Claim 9 (canceled).

10. (original) The metal vapor discharge lamp according to claim 6, wherein a wattage rating of the metal vapor discharge lamp is 100 W or less.

11. (original) The metal vapor discharge lamp according to claim 6, wherein a distance between the pair of electrodes falls within a range of 1 mm to 6 mm.

12. (original) The metal vapor discharge lamp according to claim 6, wherein the rare gas is Xe, Xe of five atoms or more being sealed in the hermetic vessel.

13. (original) A projector comprising:
a reflector;
a metal vapor discharge lamp as specified in any one of claims 1 to 12, the metal vapor discharge lamp being provided on the reflector; and
a light control member covering a front surface of the reflector.

14. (original) The projector according to claim 13, wherein the projector is installed in a vehicle and used as a headlamp.

15. (original) The projector according to claim 14, further comprising visible-light blocking means for blocking visible light and passing near-infrared light therethrough in a high beam mode, and means for removing the visible-light blocking means from a radiation direction of the metal vapor discharge lamp in a low beam mode.

16. (original) The projector according to claim 13, further comprising a visible-light blocking filter provided on at least one of front and rear surfaces of the light control member.

17. (original) The projector according to claim 16,

wherein the projector is installed in a vehicle and used as a headlamp.

18. (original) The projector according to claim 17, wherein the visible-light blocking filter blocks visible light and passes near-infrared light therethrough in a high beam mode, and further comprising means for removing the visible-light blocking filter from a radiation direction of the metal vapor discharge lamp in a low beam mode.

19. (original) A metal vapor discharge lamp lighting device comprising:

a metal vapor discharge lamp as specified in any one of claims 1 to 12; and

a lighting circuit which supplies a current three times or more a rated lamp current after the metal vapor discharge lamp is lit, and reduces the current with a lapse of time.

EXHIBIT B

to
BRIEF ON APPEAL FOR APPLICANT
(Serial No. 10/680,896)

2562/7/228

SPW/PT

RECEIVED
COOPER CUSHAM

Office Action Summary

JUL - 6 2007

Application No.

10/680,896

Applicant(s)

ISHIGAMI ET AL.

Examiner

Natalie K. Walford

Art Unit

2879

The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

Report OA -> 7/16/07 Final Repl. Resp. Due 10/2/07
4mw-11/2/07

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-8 and 10-19 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-8 and 10-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

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6mw-1/2/08

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The Amendment, filed on March 19, 2007, has been entered and acknowledged by the Examiner. Cancellation of claim 2 has been entered. Claims 1, 3-8, and 10-19 are pending in the instant application.

Claim Objections

Claims 14-18 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 13. See MPEP § 608.01(n).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Otani (US 4,870,316).

Regarding claim 1, Otani discloses a metal vapor discharge lamp (item 200) comprising: a refractory and light-transmitting hermetic vessel (not labeled); a pair of electrode (items 2A and 2B) fixed to said hermetic vessel; a discharge medium (column 5, lines 25-29) sealed in the hermetic vessel, the discharge medium containing a halide, a rare gas and substantially disusing mercury (column 5, lines 25-29), the halide containing a halide of cesium (Cs) which radiates light of near-infrared wavelengths (750-1100 nm) (column 5, lines 25-29); and most of light

irradiated from the metal vapor discharge lamp having near-infrared wavelengths (750 - 1100 nm) (column 4, lines 23-27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani (US 4,870,316) in view of Hiramoto et al. (US PUB 2001/0056294).

Regarding claim 3, Otani discloses the metal vapor discharge lamp according to claim 1, but does not expressly disclose that the lamp further comprises visible-light blocking filter, as claimed by Applicant. Hiramoto is cited to show a metal vapor discharge lamp with visible-light blocking filter (FIG. 1, item 6). Hiramoto teaches that the filter cuts out unnecessary light (i.e. visible light) (paragraph 66).

Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Otani's invention to include a visible-light blocking filter as suggested by Hiramoto for filtering out unnecessary light.

Regarding claim 5, Otani discloses the metal vapor discharge lamp according to claim 1, but does not expressly disclose that a distance between the pair of electrodes falls within a range of 1 mm to 6 mm, as claimed by Applicant. Hiramoto is cited to show a lamp with electrodes (item 12) in figure 2 where the electrodes are separated by 10 mm or less (paragraph 82). It

would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Otani's invention to include a distance between the pair of electrodes falls within a range of 1 mm to 6 mm as suggested by Hiramoto, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otani (US 4,870,316) in view of Ishigami et al. (US 6,353,289).

Regarding claim 4, Otani discloses the metal vapor discharge lamp according to claim 1, but does not expressly disclose that a wattage rating of the metal vapor discharge lamp is 100 W or less, as claimed by Applicant. Ishigami is cited to show a metal vapor discharge lamp that has a rate lamp power of at most 100 W (column 44, lines 52-58). Ishigami teaches that this rate lamp power can help control the lamp voltage (column 44, lines 52-58)

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Otani's invention to include a wattage rating of the metal vapor discharge lamp is 100 W or less as suggested by Ishigami for controlling the lamp voltage.

Claims 6-8 and 10-19 rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramoto et al. (US PUB 2001/0056294) in view of Ishigami et al. (US 6,353,289).

Regarding claim 6, Otani discloses a metal vapor discharge lamp in figure 2 comprising: a refractory and light-transmitting hermetic vessel (see FIG. 2); a pair of electrode (item 12) fixed to said hermetic vessel; a discharge medium sealed in the hermetic vessel (paragraphs 83-

86), the discharge medium containing a first halide and a rare gas (paragraphs 83-86), the first halide containing a halide of at least one of sodium (Na) (paragraph 86), the discharge medium substantially disusing mercury (paragraph 83), but does not expressly disclose a rare earth metal which radiates visible light (380-780 nm) and a ratio of visible-radiation power (380-780 nm) to near-infrared radiation power (750-1100 nm) falling within a range of 0.5:1 to 4.0:1, the visible-radiation power and the near-infrared radiation power being output when the metal vapor discharge lamp is in an ON state, as claimed by Applicant. Ishigami is cited to show a metal vapor discharge lamp that has a rare earth metal with a halide (column 11, lines 18-31). Ishigami teaches that it is known in the art that the light emission is increased and the arc can be narrowed (column 5, lines 9-22). The Examiner notes that since Ishigami uses a halide and a rare earth metal that the ratio would be present. Furthermore, Ishigami discloses that the ratio of emitted visible light to all the visible light emitted for the lamp should be small (column 8, line 64 thru column 9, line 4).

Therefore, it would have been obvious to one with ordinary skill in the art to modify Hiramoto's invention a rare earth metal which radiates visible light (380-780 nm) and a ratio of visible-radiation power (380-780 nm) to near-infrared radiation power (750-1100 nm) falling within a range of 0.5:1 to 4.0:1, the visible-radiation power and the near-infrared radiation power being output when the metal vapor discharge lamp is in an ON state as suggested by Ishigami for increasing light emission and narrowing the arc.

Regarding claim 7, the combined reference of Hiramoto and Ishigami disclose the metal vapor discharge lamp according to claim 6, wherein the discharge medium includes: a second halide which generates a relatively high vapor pressure and being a halide of at least one metal

which emits a visible light less than that emitted by the metal of the first halide; a third halide containing a halide of at least one metal which radiates near-infrared light (Hiramoto; paragraphs 83-86).

Regarding claim 8, the combined reference of Hiramoto and Ishigami disclose the metal vapor discharge lamp according to claim 6, wherein the discharge medium contains a halide of at least one of potassium (K), which radiates light of near-infrared wavelengths (750-1100 nm) (paragraph 86).

Regarding claim 10, the combined reference of Hiramoto and Ishigami disclose the metal vapor discharge lamp according to claim 6, wherein a wattage rating of the metal vapor discharge lamp is 100 W or less (Ishigami; column 44, lines 52-58).

Regarding claim 11, the combined reference of Hiramoto and Ishigami disclose the metal vapor discharge lamp according to claim 6, wherein a distance between the pair of electrodes falls within a range of 1 mm to 6 mm (Hiramoto; paragraph 82).

Regarding claim 12, the combined reference of Hiramoto and Ishigami disclose the metal vapor discharge lamp according to claim 6, wherein the rare gas is Xe, Xe of five atoms or more being sealed in the hermetic vessel (Hiramoto; paragraph 96).

Regarding claim 13, the combined reference of Hiramoto and Ishigami disclose a projector in figure 6 of Ishigami comprising: a reflector (item 6); a metal vapor discharge lamp (item 5) as specified in any one of claims 1 to 12, the metal vapor discharge lamp being provided on the reflector; and a light control member covering a front surface of the reflector (Ishigami; FIG. 12, item 32).

Regarding claim 14, the combined reference of Hiramoto and Ishigami disclose the projector according to claim 13, wherein the projector is installed in a vehicle and used as a headlamp (Ishigami; FIG. 12 and column 1, lines 13-19).

Regarding claim 15, the combined reference of Hiramoto and Ishigami disclose the projector according to claim 13, further comprising visible-light blocking means for blocking visible light and passing near-infrared light therethrough in a high beam mode (Hiramoto; FIG. 1, item 6 and Ishigami; FIG. 27, item 86a), and means for removing the visible-light blocking means from a radiation direction of the metal vapor discharge lamp in a low beam mode (Hiramoto; FIG. 1, item 6 and Ishigami; FIG. 27, item 86b).

Regarding claim 16, the combined reference of Hiramoto and Ishigami disclose the projector according to claim 13, further comprising a visible-light blocking filter provided on at least one of front and rear surfaces of the light control member (Ishigami; FIG. 4, item 7).

Regarding claim 17, the combined reference of Hiramoto and Ishigami disclose the projector according to claim 16, wherein the projector is installed in a vehicle and used as a headlamp (Ishigami; FIG. 12).

Regarding claim 18, the combined reference of Hiramoto and Ishigami disclose the projector according to claim 17, wherein the visible-light blocking filter blocks visible light and passes near-infrared light therethrough in a high beam mode (Hiramoto; FIG. 1, item 6 and Ishigami; FIG. 27, item 86a), and further comprising means for removing the visible-light blocking filter from a radiation direction of the metal vapor discharge lamp in a low beam mode (Hiramoto; FIG. 1, item 6 and Ishigami; FIG. 27, item 86b).

Regarding claim 19, the combined reference of Hiramoto and Ishigami disclose a metal vapor discharge lamp lighting device (Ishigami; FIG. 6, item 5) comprising: a metal vapor discharge lamp as specified in any one of claims 1 to 12; and a lighting circuit which supplies a current three times or more a rated lamp current after the metal vapor discharge lamp is lit, and reduces the current with a lapse of time (Ishigami; column 17, line 65 thru column 18, line 7).

Response to Arguments

Applicant's arguments with respect to claims 1, 3-8, and 10-19 have been considered but are moot in view of the new ground(s) of rejection. With regards to claims 6-8 and 10-19, the Examiner respectfully disagrees. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the argument is moot in regards to one of the lamps being used for medical and the other lighting. Both are used to light and it stated that Ishigami discloses that light emission is increased and the arc can be narrowed (column 5, lines 9-22). The Examiner points to paragraph 66 of Hiramoto, which clearly discloses that the filter can be used to cut out visible light. Hence, Applicant's limitations are met as set forth by the rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie K. Walford whose telephone number is (571)-272-6012. The examiner can normally be reached on Monday-Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

nkW

[Handwritten signature]
6/25/07

Sikha Roy

SIKHA ROY
PRIMARY PATENT EXAMINER

Notice of References Cited

Application/Control No.

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Applicant(s)/Patent Under
Reexamination
ISHIGAMI ET AL.

Examiner

Natalie K. Walford

Art Unit

2879

Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-4,870,316	09-1989	Otani, Katsuya	313/25
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
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FOREIGN PATENT DOCUMENTS

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NON-PATENT DOCUMENTS

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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Part of Paper No. 20070619



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EXAMINER

WALFORD, NATALIE K

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07/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

EXHIBIT C

to
BRIEF ON APPEAL FOR APPLICANT
(Serial No. 10/680,896)

EXHIBIT D

to
BRIEF ON APPEAL FOR APPLICANT
(Serial No. 10/680,896)

EXHIBIT E

to
BRIEF ON APPEAL FOR APPLICANT
(Serial No. 10/680,896)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,353,289 B1
DATED : March 5, 2002
INVENTOR(S) : T. Ishigami et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title page,

Item [56], **References Cited**, FOREIGN PATENT DOCUMENTS, insert in appropriate order the following:

--	JP 61-142654	6/1986
	JP 63-195944	8/1988
	JP 5-198283	8/1993
	JP 4-51497	2/1992 --

Item [56], **OTHER PUBLICATIONS**, delete in its entirety -- Document Information. --

Signed and Sealed this

Tenth Day of September, 2002

Attest:



Attesting Officer

JAMES E. ROGAN
Director of the United States Patent and Trademark Office